**SCHEMATIC - NOT TO SCALE****NOTES:**

1. Filter Fabric is non-woven geotextile (Propex 4545, Mirafi 140N, or equivalent).
2. Lay perforated drain pipe on minimum 0.5% gradient, widening excavation as required. Maintain pipe above 2:1 slope, as shown.
3. All granular backfill is recommended for support of slabs, pavements, etc. (See text for structural fill).
4. Drain Gravel to be 3/4" to 1-1/2" clean washed gravel.



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Perimeter Footing Drain Detail
Washington Green
Tigard, Oregon

3

JOE KRAMER
30 JUN 04

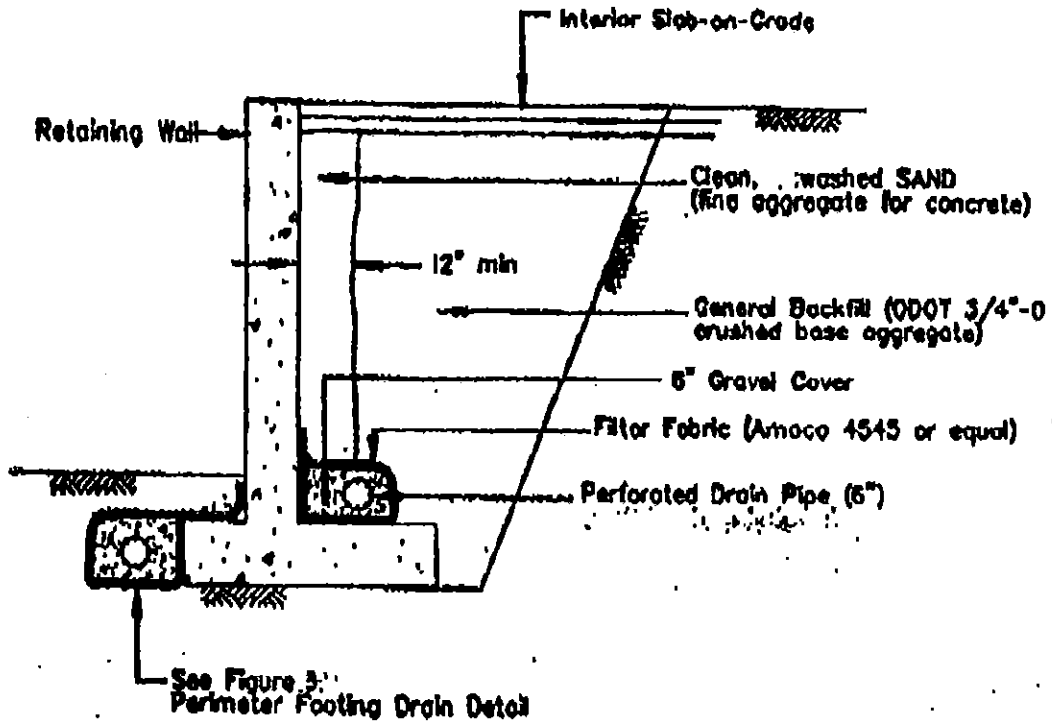
CHUCK
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2/24/04

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DATE



SCHEMATIC - NOT TO SCALE



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Retaining Wall Drain Detail
Washington Green
Tigard, Oregon

FIGURE
4

JOE HUBER
303.601.1

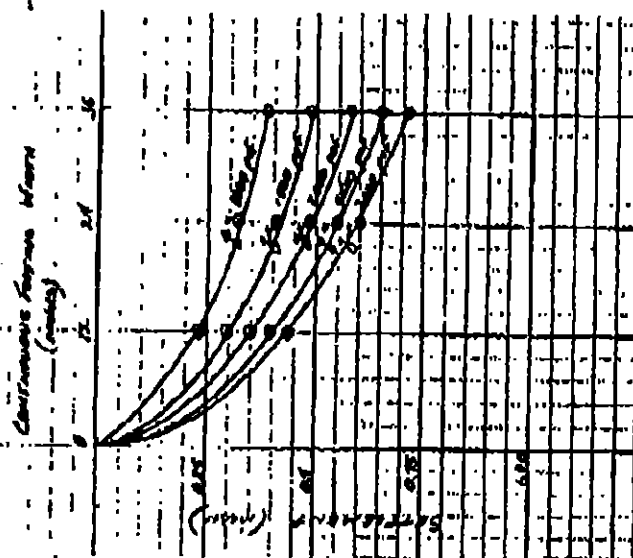
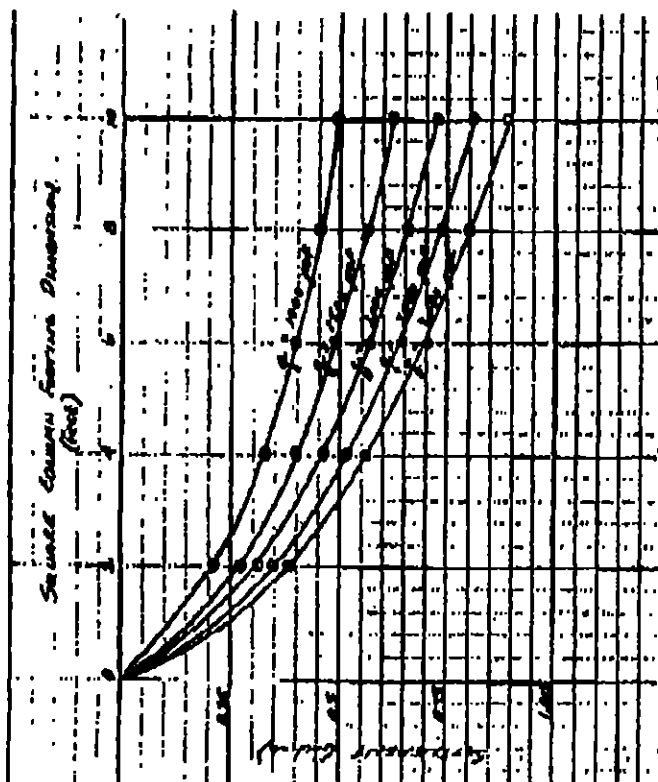
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Estimated Furrow Settlement
Where "x" The First Applied Soil Stress



Soil Loss Curves
Washington State
University of Oregon
Corvallis, Oregon

5

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APPENDIX A

**EXPLORATION PROCEDURES
LOGS OF BORINGS**

**WASHINGTON GREEN RETAIL CENTER
WASHINGTON COUNTY, OREGON**

A4 to A4

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201 EXPLORATION PROCEDURES

Exploratory Borings. Our scope of work included 7 exploratory test borings, designated B-1 through B-7 as shown on the Exploration Location Plan, Figure 2. The test borings were drilled with a solid-stem auger drilling rig under subcontract to Greg Van De Key Soil Sampling of Banks, Oregon, and were advanced to depths ranging from 4 to 30.8 feet.

Samples were typically taken at 2.5 or 5-foot intervals. Sampling was performed by 1) the Standard Penetration Test (SPT) method, and 2) hydraulically pushing thin-walled steel tubes. Sampling methods are described as follows:

- ▶ **SPT Method (ASTM D1586)** - A 2-inch O.D. split-barrel sampling tube is driven into the soil with blows from a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler each of three 6-inch increments is recorded and the sum of the blows for the final 12 inches of penetration is regarded as the N-value or SPT resistance. The N-value is a measure of the relative density of sands or the strength/consistency of clayey, cohesive soils and is recorded as blows per foot (bpf).

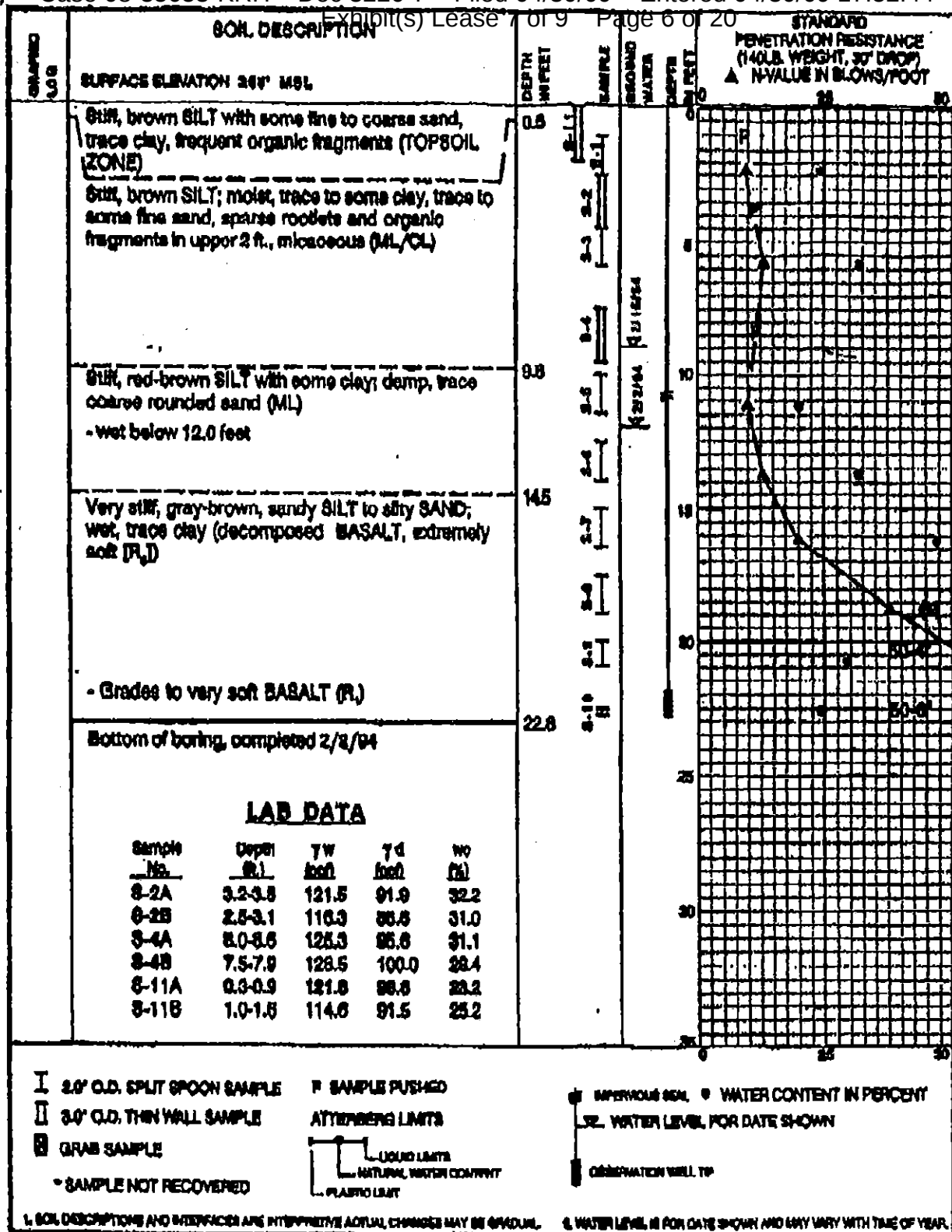
Following split-barrel removal from the boring and sample field classification, a representative soil sample is saved in an airtight jar. The jar is identified and returned to our laboratory.

- ▶ **Thin-Walled Tube Method (ASTM D-1587)** - Thin-walled tube samples are used to obtain relatively undisturbed samples for laboratory testing. A 3-inch, thin-walled steel tube is hydraulically pushed below the base of the boring and carefully removed from the hole. The ends of the tube is sealed to prevent moisture loss. The tube is labeled and returned to our laboratory for extrusion, classification and testing, as required.

All test borings were logged by an experienced geologist from our staff. She directed the sampling program and recorded sample depth/type, identified all jar/tube samples, field classified the soils, recorded relative drill action, and developed a preliminary log of the soil units encountered. Surface elevations of the borings were estimated using topography from a site plan provided by W&H Pacific. The surface elevations are presented on the Logs of Borings.

Final logs of the test borings are presented on Figures A-1 through A-9. These reflect the descriptions of soil units encountered and their relative depths from the ground surface. The SPT resistance values (N-values) and natural moisture contents of the samples are plotted graphically.

Information relative to groundwater is also presented on the Logs of Borings. Groundwater observation wells were installed in Borings B-1 and B-3.



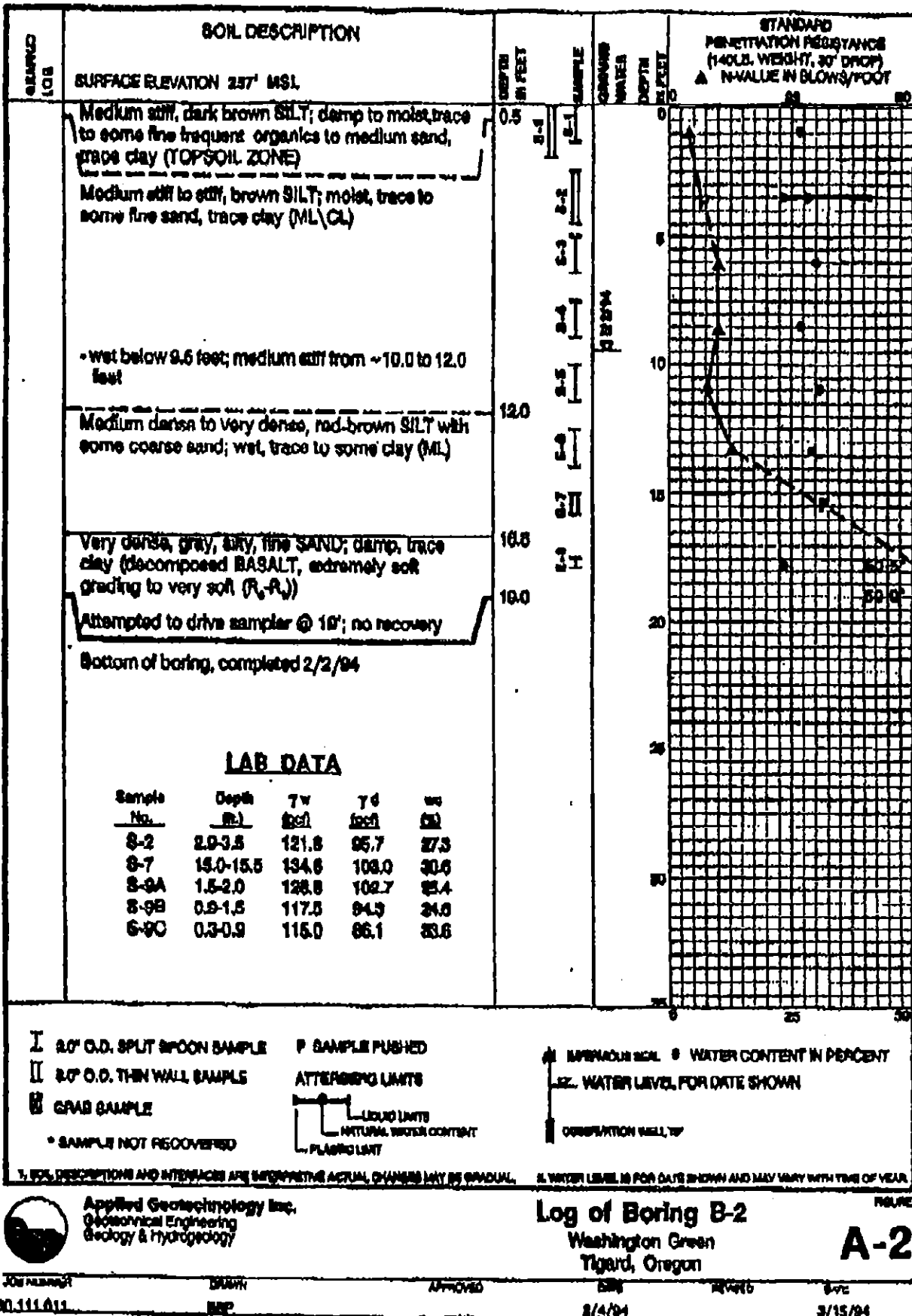
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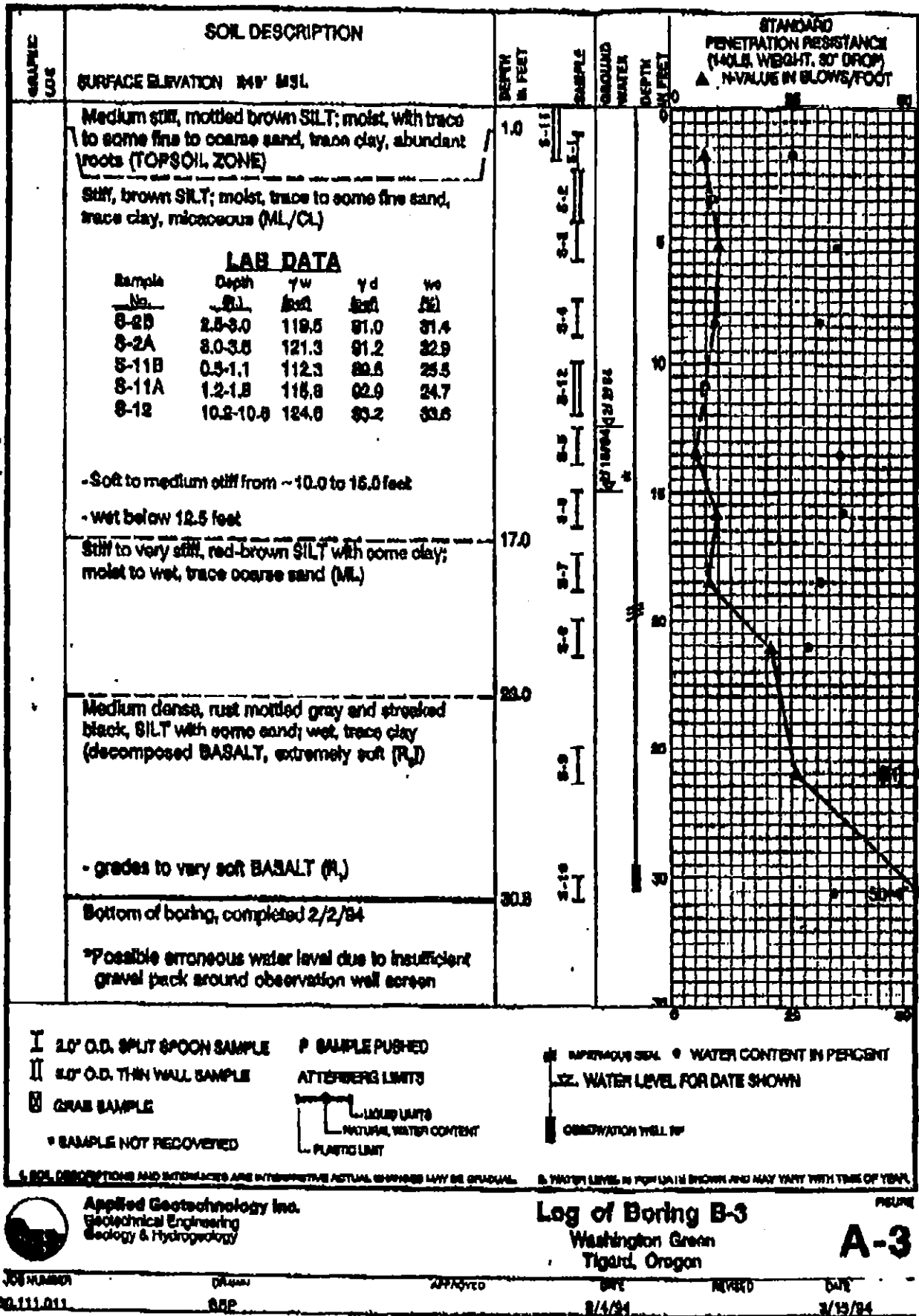
Log of Boring B-1
Washington Green
Tigard, Oregon

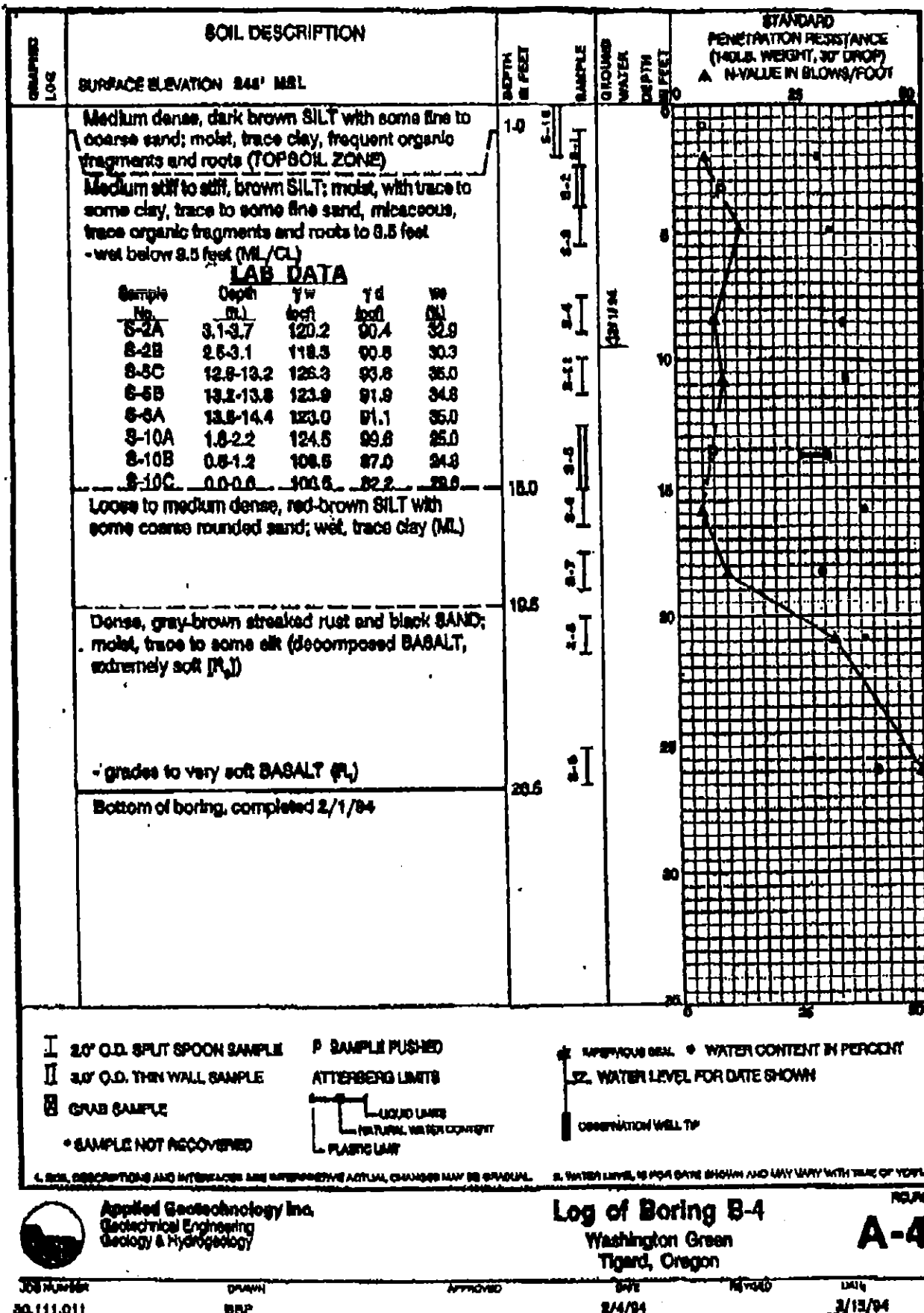
FIGURE

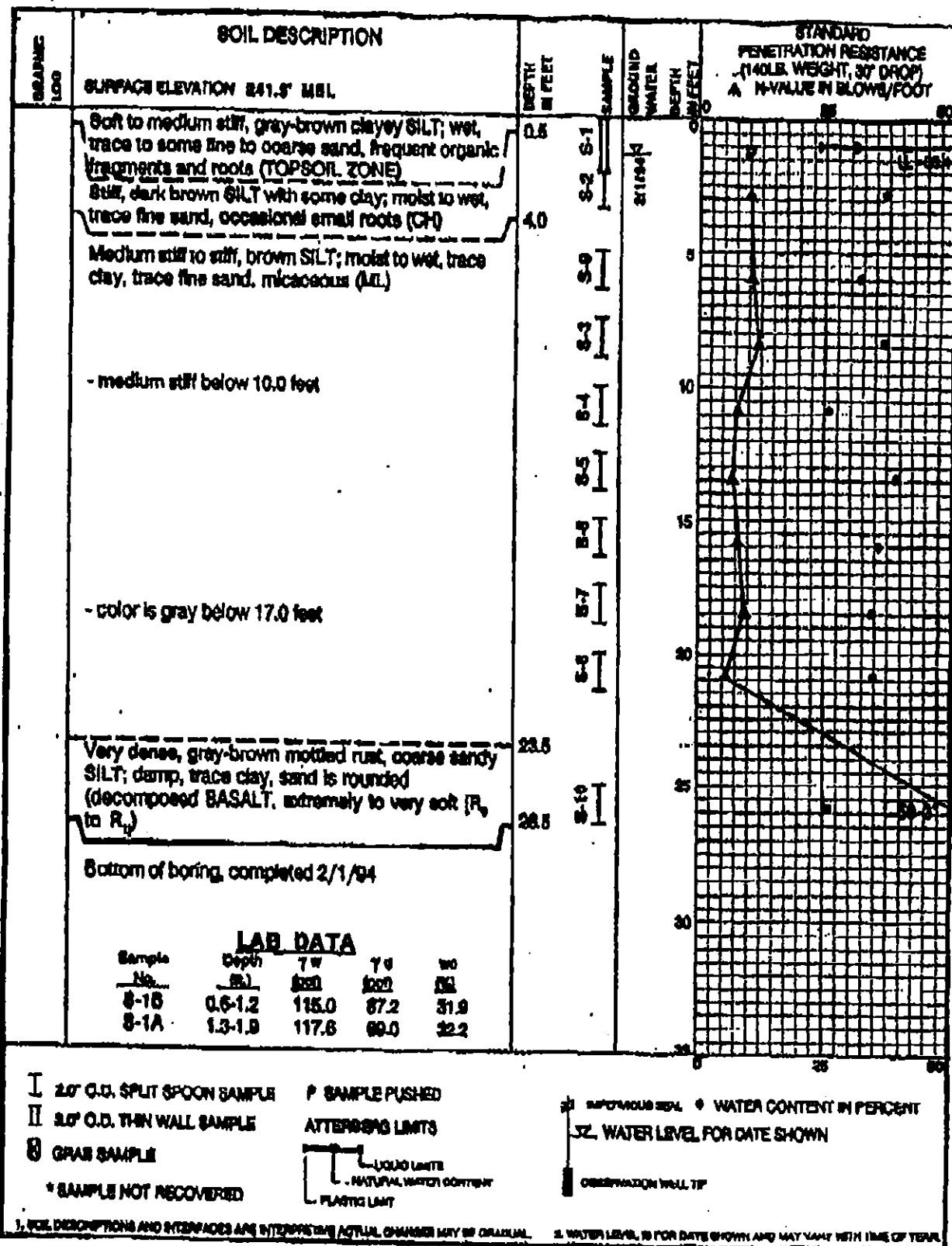
A-1

JOE HANSEN	DATE	APPROVED	DATE	REVISED	DATE
32.111.011	8/15/04		8/4/04		3/15/04









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Log of Boring B-5
 Washington Green
 Tigard, Oregon

A-5

JOB NUMBER
 30.111.011

DRAWN
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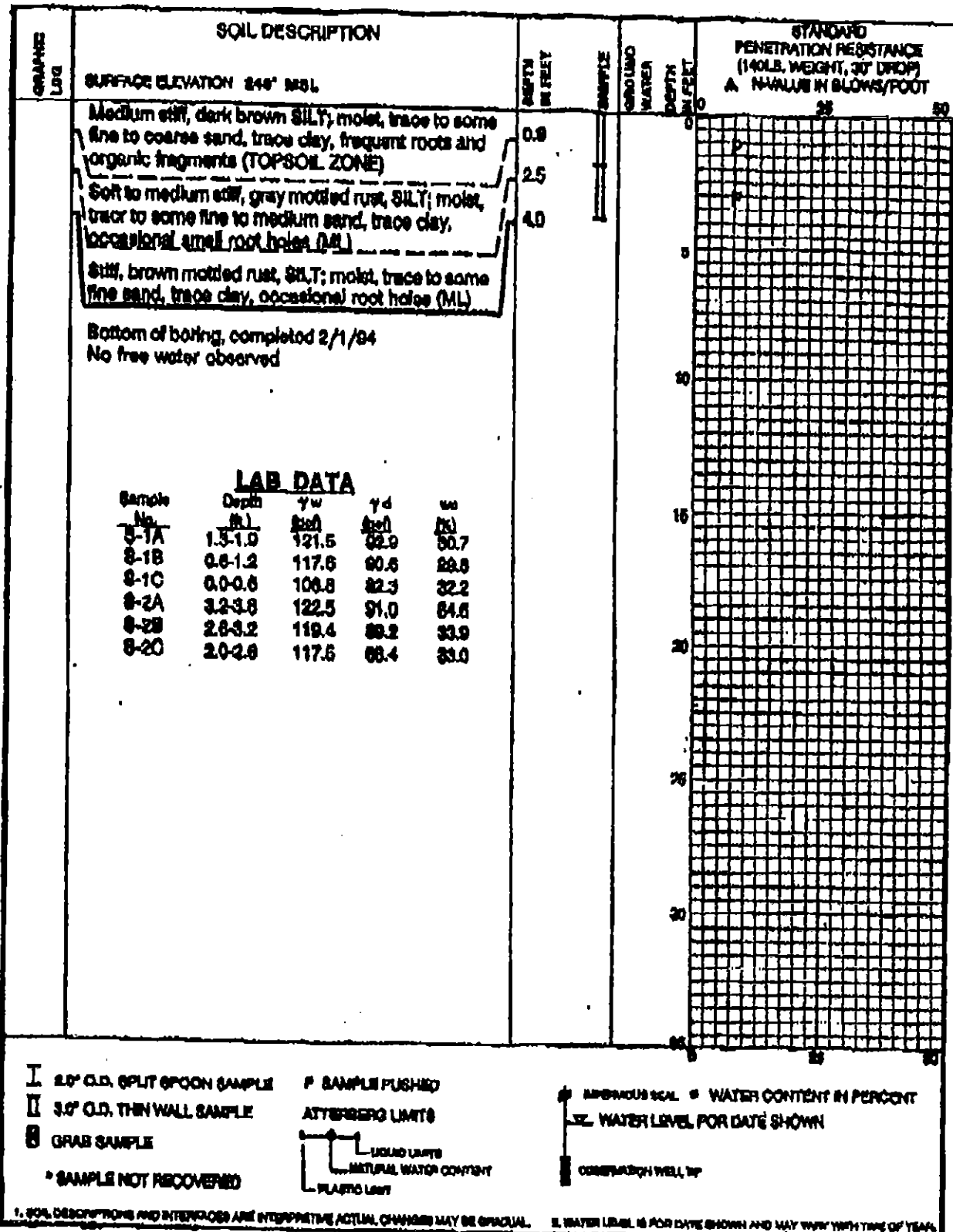
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2/4/94

3/15/94

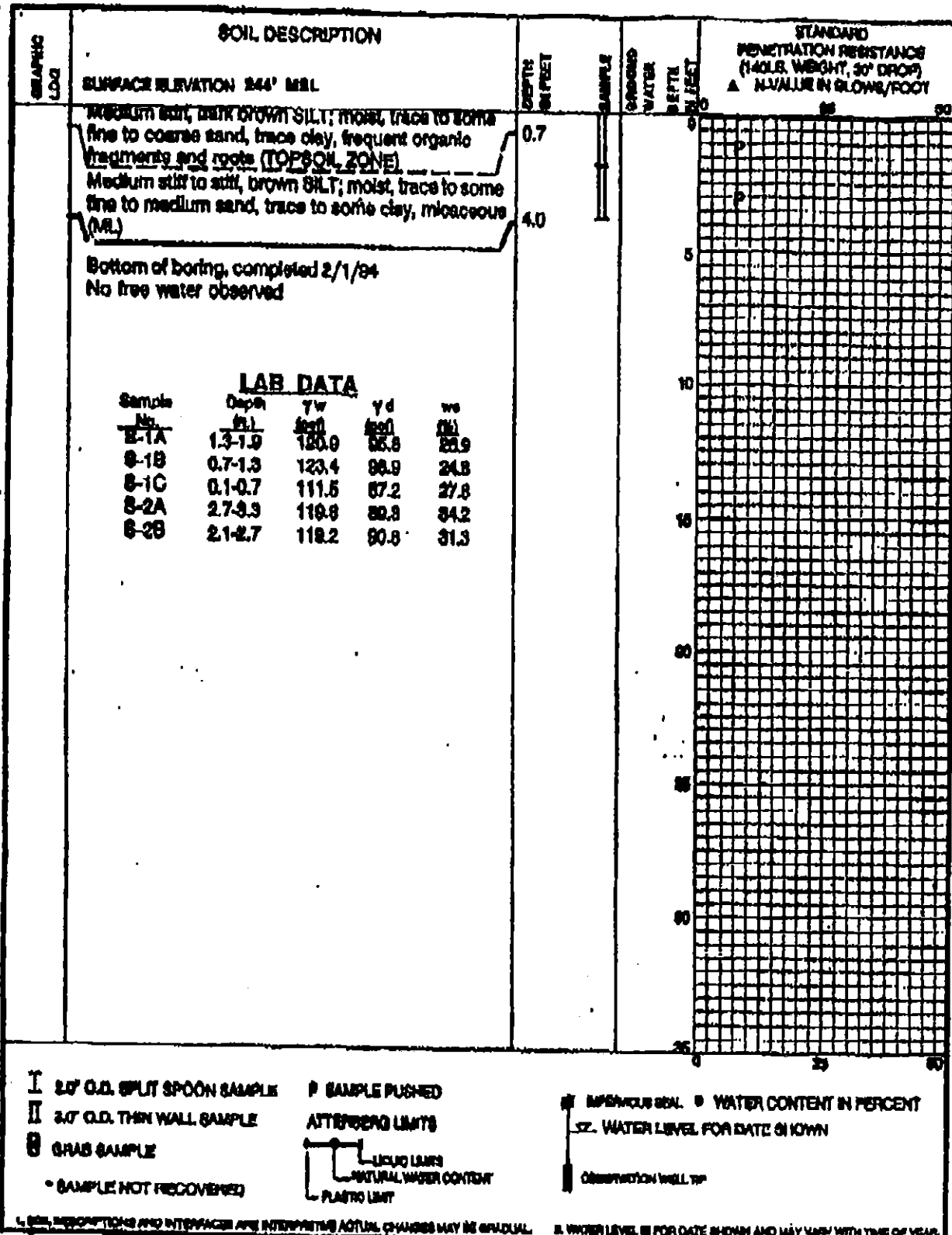


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Log of Boring B-6
 Washington Green
 Tigard, Oregon

A-6

JOB NUMBER	OWNER	APPROVED	DATE	REVISED	DATE
30.111.011	RRP		8/4/84		3/13/94



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Log of Boring B-7
 Washington Green
 Tigard, Oregon

A-7

JOE RUBEN
 50 111 011

DRAWN
 RRC

APPROVED

DATE
 2/4/84

REVIEWED

DATE
 3/15/84

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APPENDIX B

LABORATORY TESTING & SELECT FIELD DATA

**WASHINGTON GREEN RETAIL CENTER
WASHINGTON COUNTY, OREGON**

**Tables B-1 and B-4
Figures B-1 through B-5**

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TABLE B-1 - SELECT FIELD & LAB DATA
 Part A - Shelby Tube Data

Depth (ft)	Tube No.	Depth (ft)	Penetration (lb)	Penetration (lb)	Penetration (lb)	Penetration (lb)
0-2.2'	B-1 (B-11)	0.2-0.9'	91.0	25.2	3.0	.84
		1.0-1.8'	88.8	23.2	2.25	.38 (avg.)
	B-2 (B-9)	0.2-0.9'	86.1	24.6	2.25	.34
		0.9-1.8'	84.2	24.8	1.8 (avg.)	.35 (avg.)
		1.8-2.1'	102.7	38.4	2.25	.82
	B-3 (B-11)	0.9-1.1'	88.5	28.5	3.7	.51
		1.2-1.8'	92.9	24.7	1.7 (avg.)	.9 (avg.)
	B-4 (B-10)	0-0.8'	82.2	29.8	2.25	.42
		0.8-1.2'	87.0	24.8	2.25	.38
		1.8-2.2'	88.8	25.0	3.75	.45 (avg.)
	B-5 (B-1)	0.8-1.2'	87.2	31.8	0.7	.38
		1.2-1.8'	88.0	32.2	0.4	.27 (avg.)
	B-6 (B-1)	0-0.8'	82.2	32.2	1.5	.38
		0.8-1.2'	80.6	25.8	2.25	.30
		1.2-1.8'	82.9	30.7	1.00 (avg.)	.18 (avg.)
	B-7 (B-1)	0.1-0.7'	87.2	27.8	1.75 (avg.)	.38 (avg.)
		0.7-1.2'	82.8	24.8	1.75 (avg.)	.38 (avg.)
		1.2-1.8'	85.2	28.9	1.25	.22 (avg.)
2.5-4.8'	B-1 (B-2)	2.5-3.1'	88.8	31.0	2.25	.42
		3.2-3.8'	81.8	32.2	0.25	.61
	B-2 (B-2)	2.9-3.6'	86.7	27.3	2.25 (avg.)	.40 (avg.)
	B-3 (B-2)	2.5-3.0'	81.0	31.4	2.75	.80
		3.0-3.5'	81.2	32.9	3.50	.84
	B-4 (B-2)	2.5-3.1'	80.8	30.2	2.75	.48
		3.1-3.7'	80.4	32.2	4.25	.70 (avg.)
	B-6 (B-2)	2.0-2.8'	88.4	33.0	1.25	.38 (avg.)
		2.9-3.2'	89.2	33.9	2.5 (avg.)	.37 (avg.)
		3.2-3.8'	81.0	24.8	3.0	.52 (avg.)
7.5-9.8'	B-1 (B-4)	7.1-7.7'	90.8	31.3	2.25	.44 (avg.)
		7.7-8.3'	89.3	24.2	3.25 (avg.)	.38 (avg.)
		8.0-8.8'	85.8	31.1	2.25	.57
10.0-12.0'	B-3 (B-12)	10.2-10.8'	83.2	33.8	1.25	.24
12.0-18.0'	B-4 (B-6)	12.8-13.2'	89.8	38.0	1.75	.43 (avg.)
		13.2-13.8'	81.8	35.0	1.75	.40
		13.8-14.3'	81.1	24.8	1.0	.25 (avg.)
18.0-17.0'	B-2 (B-7)	18.0-18.6	102.0	30.8	2.0 (top)	.82 (top)
					4.5+ (bot.)	.82 (bot.)

H4 to H4

TABLE B-1
Part B - SPT Sample Data

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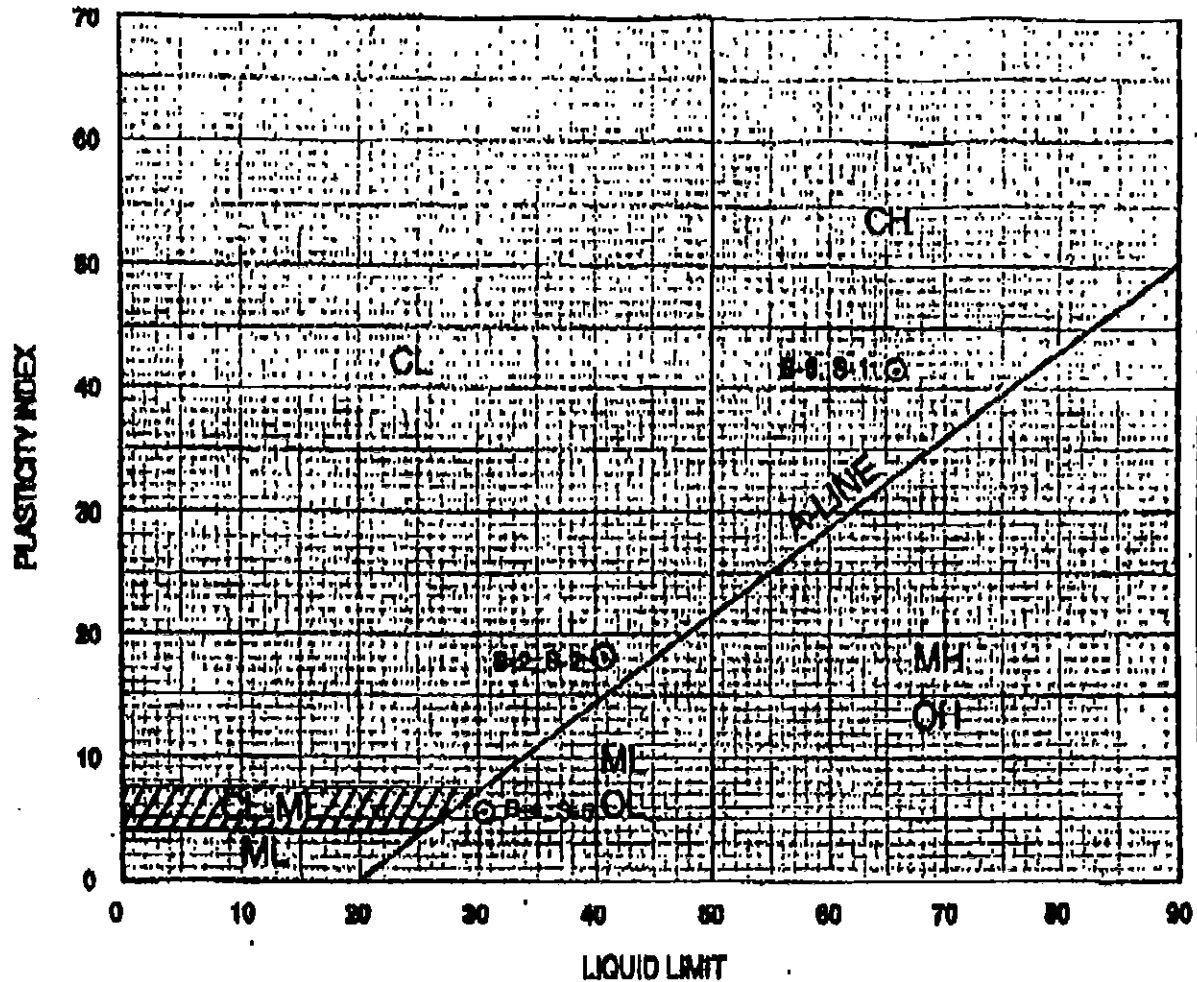
Sample No.	Depth (ft)	SPT Blows	Notes
B-1	0-1 @ 1.0-2.5'	8	23.8
	2-3 @ 4.5-6.0'	13	31.8
	4-5 @ 10.0-11.5'	10	29.1
	6-8 @ 12.5-14.0'	15	31.8
	9-7 @ 15.0-16.5'	20	47.0
	8-5 @ 17.5-19.0'	38	51.8
	9-9 @ 20.0-21.5'	50/4"	29.8
	9-10 @ 22.5-24.0'	50/3"	24.1
B-2	0-1 @ 0-1.5'	4	28.8
	2-3 @ 2.5-4.0'	10	30.0
	4-5 @ 7.5-9.0'	10	29.8
	6-5 @ 10.0-11.5'	8	31.1
	8-6 @ 12.5-14.0'	18	29.5
	8-8 @ 17.5-19.0'	50/5"	22.8
	No recovery	50/0"	n/a
B-3	0-1 @ 1.0-2.5'	7	25.3
	2-3 @ 4.5-6.0'	10	34.2
	4-4 @ 7.5-9.0'	8	30.9
	6-5 @ 12.5-14.0'	6	34.9
	8-6 @ 15.0-16.5'	9	38.3
	9-7 @ 17.5-19.0'	8	30.7
	9-8 @ 20.0-21.5'	21	27.7
	8-9 @ 25.0-26.5'	28	30.6
B-4	0-1 @ 1.0-2.5'	8	23.8
	2-3 @ 4.0-5.5'	13	31.8
	4-4 @ 7.5-9.0'	6	33.7
	6-12 @ 10.0-11.5'	8	34.8
	8-6 @ 15.0-16.5'	9	37.3
	8-7 @ 17.5-19.0'	10	29.1
	8-8 @ 20.0-21.5'	31	38.1
	8-9 @ 25.0-26.5'	49	40.3
B-5	0-2 @ 2-3.5'	10	37.0
	2-4 @ 5.0-6.5'	11	31.9
	4-3 @ 7.5-9.0'	7	36.3
	6-4 @ 10.0-11.5'	8	29.4
	8-5 @ 12.5-14.0'	7	29.3
	8-6 @ 15.0-16.5'	8	36.8
	8-7 @ 17.5-19.0'	8	34.0
	8-8 @ 20.0-21.5'	8	34.3
	8-10 @ 25.0-26.5'	33	28.8

A1 to A1

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**TABLE B-2
COMPACTED COR TEST RESULTS**

Bulk 1	106	92	2.14	1.88	2.38	2.41
Bulk 1	110	98	3.62	3.75	4.58	5.48



S-TP- NUMBER	SAMPLE NUMBER	U.S.C.	WATER CONTENT IN PERCENT	LIQUID LIMIT IN PERCENT	PLASTIC LIMIT IN PERCENT	PLASTICITY INDEX
B-2	S-2	CL	22.9	40.9	23.2	17.7
B-4	S-5	ML	30.7	30.4	25.0	5.4
B-5	S-1	CH	30.8	65.4	23.4	41.9



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Plasticity Chart
 Washington Green Retail Center
 Washington County, Oregon

SCALE

B-1

JOB NUMBER
 84111.011

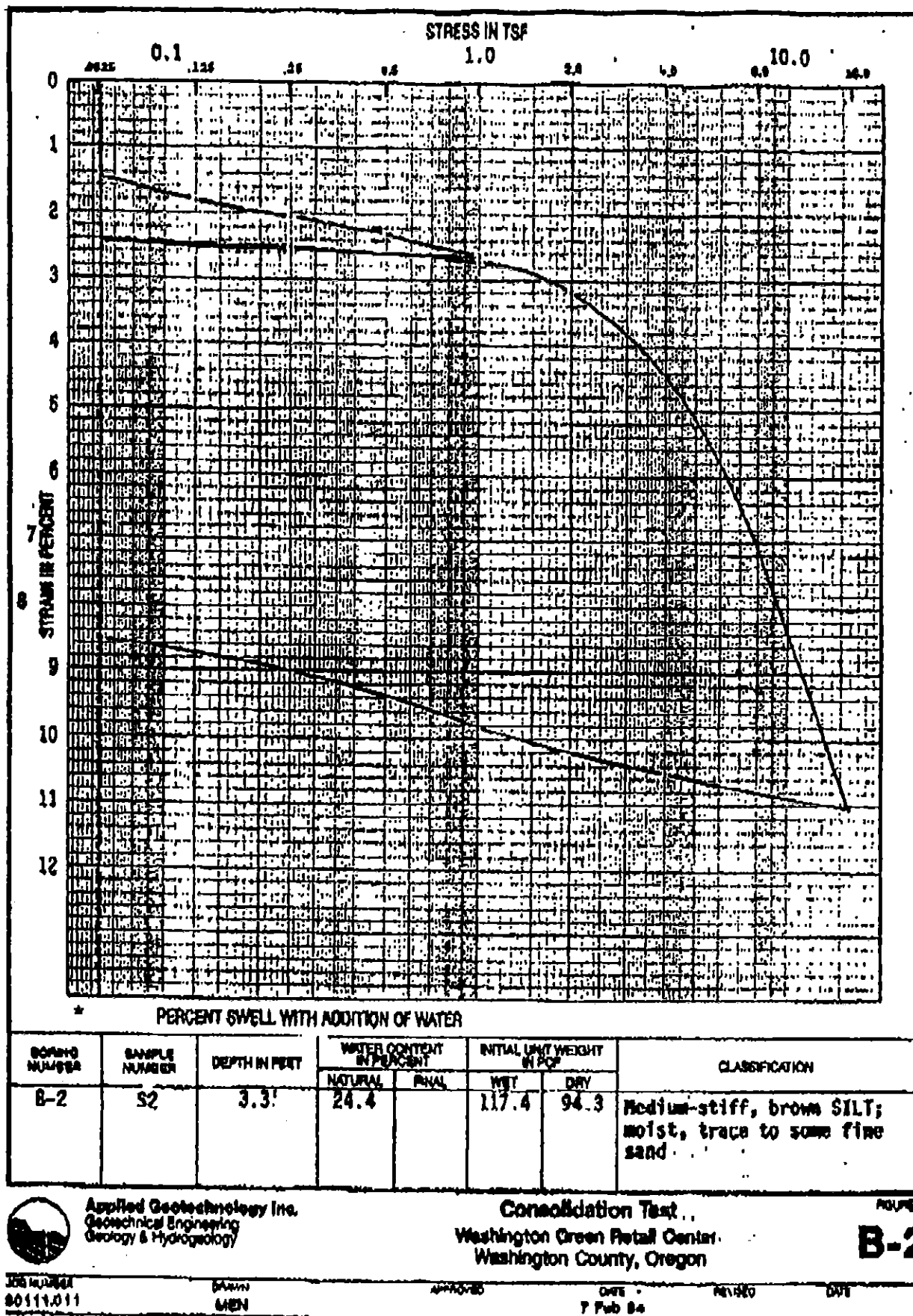
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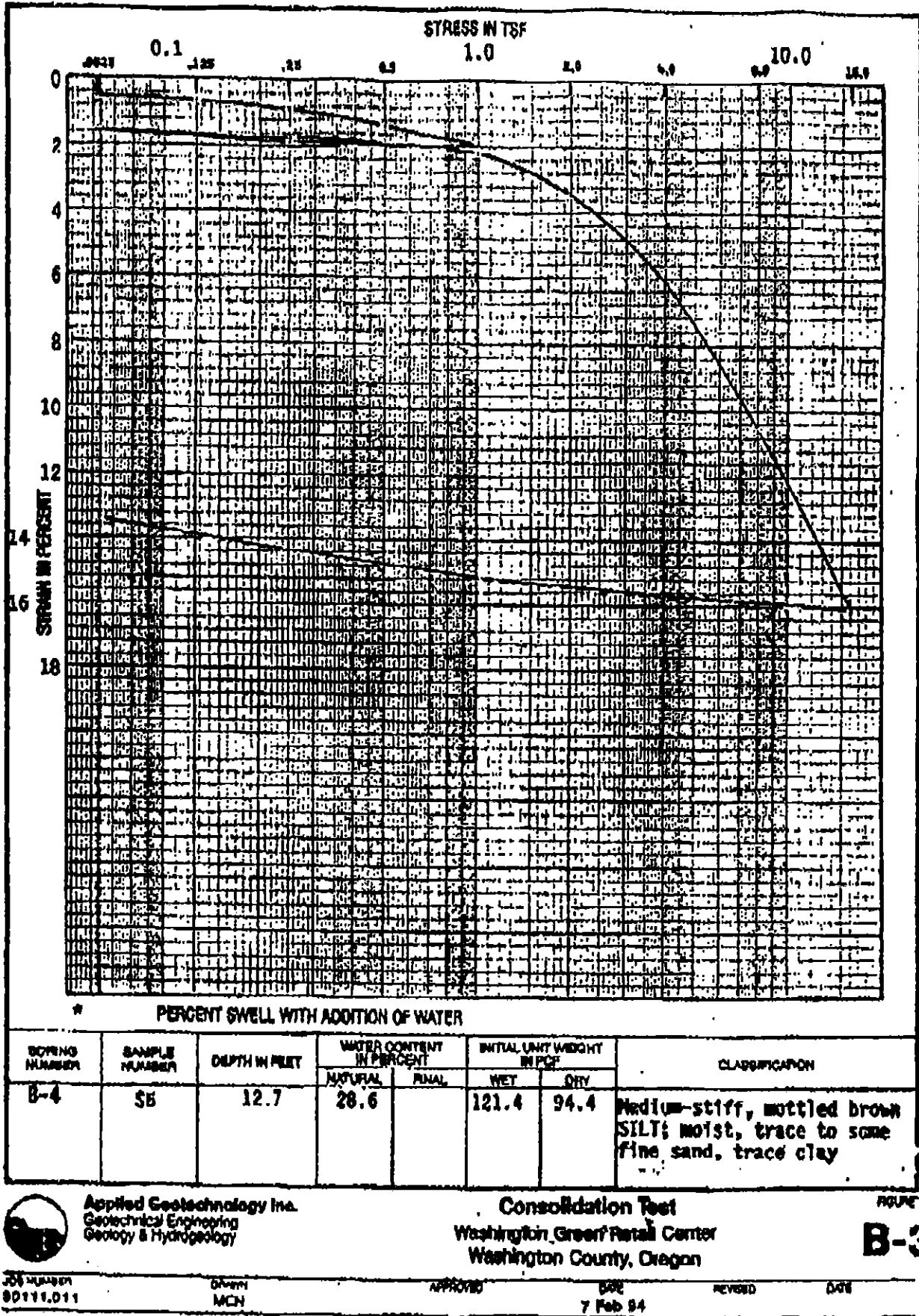
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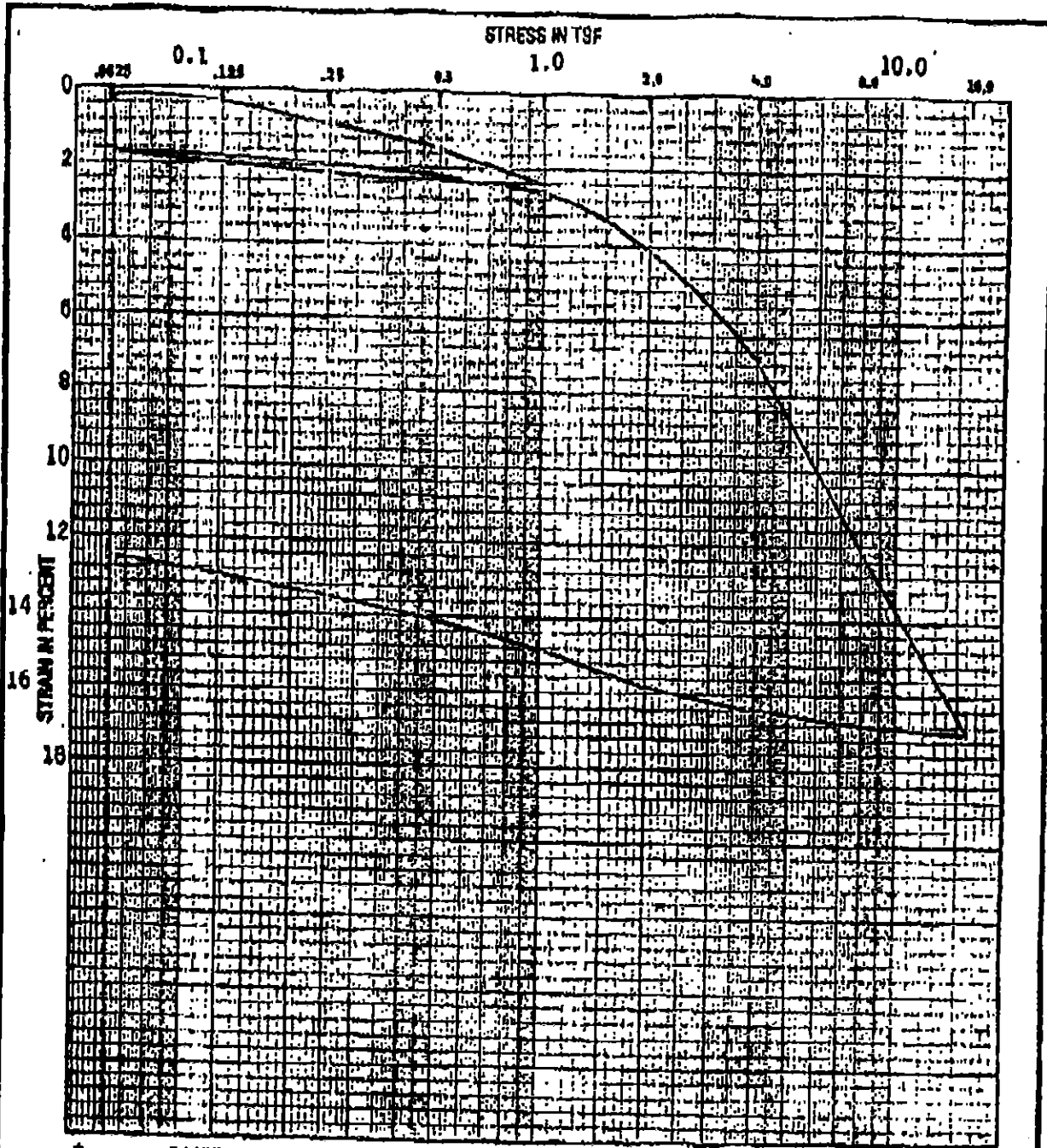
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A4 to A4



* PERCENT SWELL WITH ADDITION OF WATER

BORING NUMBER	SAMPLE NUMBER	DEPTH IN FEET	WATER CONTENT IN PERCENT		INITIAL UNIT WEIGHT IN PCF		CLASSIFICATION
			NATURAL	FINAL	WET	DRY	
B-5	S-1	1.7'	34.3		113.8	84.7	Medium stiff, dark gray- brown SILT; wet, trace to some fine to coarse sand



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Consolidation Test
Washington Green Retail Center
Washington County, Oregon

FORM

B-4

JOB NUMBER
90111.011

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